



## A CUP OF HEALTH WITH CDC

### *Indoor Waterparks: The Hidden Risks*

*Respiratory and Ocular Symptoms Among Employees of a Hotel Indoor Waterpark Resort — Ohio, 2007*

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*[Announcer] This podcast is presented by the Centers for Disease Control and Prevention. CDC — safer, healthier people.*

[Dr. Gaynes] Welcome to *A Cup of Health with CDC*, a weekly feature of the MMWR, the Morbidity and Mortality Weekly Report. I'm your host, Dr. Robert Gaynes.

Indoor waterparks are among the fastest growing resort features in the United States. While the popular attractions manage to keep the weather out, some might be keeping irritating gases in. A recent CDC study documented over 650 reported cases of respiratory and eye irritation at one hotel's indoor waterpark.

Lilia Chen is an industrial hygienist with CDC's National Institute for Occupational Safety and Health. She's joining us today by telephone to discuss the recent outbreak at an indoor waterpark. Welcome to the show, Lilia.

[Lilia Chen] Thank you, Bob.

[Dr. Gaynes] Lilia, how many indoor waterparks are there in the United States?

[Lilia Chen] There were over 180 indoor waterparks in 2007 and it's a rapidly growing industry.

[Dr. Gaynes] So this outbreak, was this the first that related exposure to irritating gases in an indoor waterpark to people's symptoms?

[Lilia Chen] No. These gases have actually been suspected of causing illnesses in other indoor pool environments, but what we were able to do in this study was look at different characteristics of the waterpark to see why these gases were being formed and accumulate at the pool deck level. Some examples of these characteristics include ventilation, water chemistry, and the number of bathers in the park.

[Dr. Gaynes] Lilia, exactly what causes these irritating gases?

[Lilia Chen] These gases, which are called chloramines, are formed when chlorine, which is used as a disinfectant in the pool water, mixes with nitrogen-containing materials from swimmers, like their sweat or urine. Once these chemicals mix in the water, they can get into the air or can be sprayed into the air by the waterpark's spray features.

[Dr. Gaynes] What are the symptoms of exposure?

[Lilia Chen] Exposure to chloramine has been associated with eye irritation and respiratory irritation, and those can include symptoms like cough, sore throat, and wheezing.

[Dr. Gaynes] Could exposure to this type of irritating gas be fatal?

[Lilia Chen] We have never had a report of any fatalities with exposure to chloramines.

[Dr. Gaynes] So what should people do to make sure indoor waterparks are safe?

[Lilia Chen] I'm going to answer this question in three different ways. First, operators and managers of indoor waterparks should make sure that the design of their ventilation system moves and exhausts air at pool deck level. They should also monitor their water chemistry and keep them within recommended guidelines. Secondly, they should educate their employees on recognizing the symptoms caused by these chemicals and ask them to let management know if they experience these symptoms as soon as possible. And lastly, management should encourage patrons to shower before entering the pool, to get rid of any sweat or excess chemicals on their skin. That way, it'll prevent those chemicals from mixing with the chlorine in the pool water. And small children should be encouraged to take frequent toilet breaks to prevent any accidents in the pool that would allow the chemicals in their urine to mix with chlorine in the water.

[Dr. Gaynes] Lilia, where can listeners get more information on this topic?

[Lilia Chen] They can go to the CDC website at [www.cdc.gov/niosh](http://www.cdc.gov/niosh), which is n-i-o-s-h, and search for the terms "indoor waterpark" and some of our reports will come up.

[Dr. Gaynes] Thanks Lilia. I've been talking today with CDC's Lilia Chen about a recent outbreak at an indoor waterpark. If you go to an indoor waterpark, remember to shower and if you experience respiratory or eye irritation, leave the area. If the problems persists, see your healthcare provider.

Until next time, be well. This is Dr. Robert Gaynes for *A Cup of Health with CDC*.

[Announcer] For the most accurate health information, visit [www.cdc.gov](http://www.cdc.gov) or call 1-800-CDC-INFO, 24/7.